Application of the Total Quality Management (TQM) Philosophy in a Macedonian Air Conditioning Company

Elizabeta MITREVA[1*], Elena Parapunova GORKOV[1], Hristijan GJORSHEVSKI[2], Bardhyl TUSHI[3]

[1]Faculty of Tourism and Business Logistics, Gevgelija, University "Goce Delcev" – Stip, Republic of North Macedonia
[2]Faculty of Computer Science and Engineering (FCSE), UKIM, Skopje, Republic of North Macedonia
[3]Mother Tereza University, Skopje, Republic of North Macedonia
[4]Corresponding Author: Elizabeta Mitreva; E-mail: elizabeta.mitreva@ugd.edu.mk; elizabeta.mitreva@gmail.com

Abstract

World globalization is a key factor for the increase of market competition through companies that are continuously improving their innovation, productivity as well as cost optimization. This is achieved through the constant development of innovative ideas and involving every employee in the process of change within the company. In order to meet increasingly more demanding customers, companies need to implement quality improvement in every phase of their internal processes.
This paper analyses the application of the quality system currently in place within a Macedonian Air Conditioning Company and aims to create and implement a Total Quality Management (TQM) system on the basis of that research. By successfully implementing the new TQM philosophy, all of the companies' internal processes and employees work toward process improvement, quality assurance as well as meeting the demands and wishes of all parties involved. The TQM system also plays a huge factor in improving customer loyalty and trust, the company's credibility and image as well as its market share and placement.

Keywords: *internal standardization; quality control; quality costs; education and motivation of the employees; TQM (Total Quality Management) system; quality of the service.*

1. Introduction

Quality is the key factor for the continued development and future growth for any organization as well as one of the most important ingredients towards a company's successful emergence in an ever more changing and demanding market environment. All activities that determine the goals, quality improvement, personal responsibilities, planning, insurance, control and company development fall under the scope of the total quality management system. The successful implementation is the responsibility of all levels of management within the organization guided and mentored by top management. The implementation of this system as well as its application requires careful and methodical planning as well as providing with the necessary technical and organizational conditions. The biggest potential however, lies within a company's employees, their technical prowess and proper motivation.

The Total Quality Management (TQM) philosophy is an organizational change aimed to improve the quality of products and services the company offers as well as the people involved in the business process.

The ultimate goal of TQM is to integrate all organizational functions (marketing, finance, design, engineering, production, client services) and to focus on satisfying the needs of the clients and therefore fulfilling the company's organizational goals. The process of applying a new TQM strategy in a business begins by developing a projection of a good quality documentation system that covers all business processes within an organization. This provides with a solid foundation to successfully apply Statistical Process Control (SPC) and effective teamwork, which in turn cannot be set in the case of a poor-quality system (Mitreva et al., 2016). The way to process and service quality improvement as well as business process optimization leads through the application of a suitable methodology for projection and implementation of the TQM system. This methodology consists of: internal standardization methodologies; techniques and methods for faultless work flow; education and motivation and cost quality analysis. This paper has focused on screening an Air conditioning company's process of application of the quality system and as a result of the research, propose a plan to implement a total quality management system.

2. Literature Review

Every advantage that an organization has over its competition can be key for the development and application of the quality insurance system. Many companies take their first step towards the implementation of a TQM (Total Quality Management) system by implementing ISO 9001 (Balbaster Benavent et al., 2005; Casadesus & Gimenez, 2000). Upgrading the ISO 9001:2015 with the TQM strategy ultimately results in the rise in quality. After defining, designing and perfecting the process through extensive research, the upgrade has a positive influence on productivity and cost optimization. The quality system has several key factors, such as the organizational structure, responsibilities, actions, processes and resources invested by the management in reaching the quality standard (Garg, 2014; Mitreva, 2011, Mitreva et al., 2017b).

Quality assurance is a system that can detect problems before they occur. Projecting the Quality assurance system is based on the Deming circle PDCA (Plan, Do, Check, Act) model that analyses the conditions, methods and processes as well as

their interaction. Quality Management (QM) encompasses a system of procedures, protocols and documents that are needed to then define, plan, manage, control and evaluate all existing and foreseeable processes within a company, both internal and external. Maintaining and ensuring quality is the responsibility of everyone involved, regardless of their level in the organization. Quality is the sum of all business activities. To re-examine the quality system means to assess the current system and how adequate it is in relation to the ever-changing goals and operational policies of the company determined by the management.

One of the demands of the ISO 9001:2015 is using the Statistical Process Control (SPC). With SPC we can measure the current process performance and define possible improvements that can be made. The important statistical methods that are often used to detect and prevent defects are: checklists, Pareto diagram, cause and effect diagrams (Ishikawa diagram), control tickets, correlation diagrams, histograms, trend movements and so on (Kaplan & Norton, 2001; Ciampa, 2005; Deming, 1996; Mitreva et al., 2017a).

Good education and training for the employees is key to ensure a good quality system. Employees need to learn new techniques and methods of working to minimize defects. They also need the proper motivation and drive in order to secure and upgrade the quality without being forced to do their work (Gómez Gómez et al., 2011; Wee et al., 2016; Parker, 2003; Fatemi et al., 2016; Beskese & Cebeci, 2011).

The implementation of the total quality management philosophy (TQM) goes hand in hand with choosing the right people to perform all the tasks in accordance to the level of their education, motivation as well as employee suitability and competence.

Motivation is one of the pillars of the quality assurance system. It is an essential part of building a good system. All the internal factors that consolidate the intellectual and physical energy depend on the motivation of the employees. Motivation initiates and organizes individual activities, gives purpose and direction to employee actions and determines the direction, intensity and duration.

By analyzing the cost of quality improvement one can control the loss and bring it to a minimum when looking at the expenditure of materials and employee energy. The cost to achieve quality is very important to the company (Beskese & Cebeci 2001; Mitreva & Filiposki, 2012; Mitreva et al., 2016).

Projecting a measurement system enables a systematic approach towards results gained in terms of analyzing and determining critical points, defining loss, problem solving and their successful implementation. In order to close the PDCA circle we must first go through the results of how the business operates and then implement the necessary corrections in order to achieve a spiraling and continuous improvement that will lead to new possibilities to improve the quality in the future. Customer suggestions, appeals, recommendations, debates and questionnaires represent the resources for this measurement system. In order for a company to react accordingly, it is very important to avoid misunderstanding the customers appeals and objections, and to put in practice a continuous monitoring of customer satisfaction. This is a very valuable resource of information for the strategic business analysis and management. How pleased the customer is with the product is a determining factor in future customer relations. A satisfied customer has a higher chance of becoming a recurring customer (Madan, 2010; Ritchie & Dale, 2000; Saat & Talib, 2015; Shameer & Sing, 2013).

3. Methods in the Research and Analyses of the Results

This study applies the QC-CE model in total quality management as a combination of the QC-concept (Quality Circle) as well as the CE approach (Cause and Effect) (Mitreva, 2011; Mitreva & Filiposki, 2012). The foundation of the QC-concept is the Deming-circle that is based on the: plan – do – check – act circle. The application of this model means that every activity in the organization is precisely planned and executed and that the results of it need to be checked. If they do not meet the expectations, corrections need to be made. These corrections then make a full circle to begin again by planning. The CE – approach (Cause and Effect) is the most suitable to include all elements and factors that are crucial for the completion of every systematic task along the way. The CE - diagram enables us to take into consideration all the factors that have a direct correlation to the task completion and function of the quality system: What?, Who?, When?, How?, Where?, Whom?. We can see more details about the QC – CE model application in the air conditioning and heating company later in this study (Mitreva & Filiposki, 2012).

By following the newest trends, the company for air conditioning and heating has delegated the activities and responsibilities between all sectors and departments in order to satisfy client demands and requests more easily, and at the same time to maximize the advantages to be gained in the business network in order to form a solid foundation towards continuous growth and development. In this company, it is the director that defines the responsibilities, obligations and internal relations of the company employees as well as their job descriptions. The application, maintenance, utilization and constant improvement of the total quality management system falls under the responsibilities and obligations of the management. This is underlined by information gained on the importance of meeting the demands of the clients, complying to laws and regulations, defining and implementing quality improvement policies, determining the company's quality goals, securing the necessary resources as well as the constant self-re-examination and strive for improvement by the management. On the first diagram, it can see the organizational structure of the company, Figure 1.

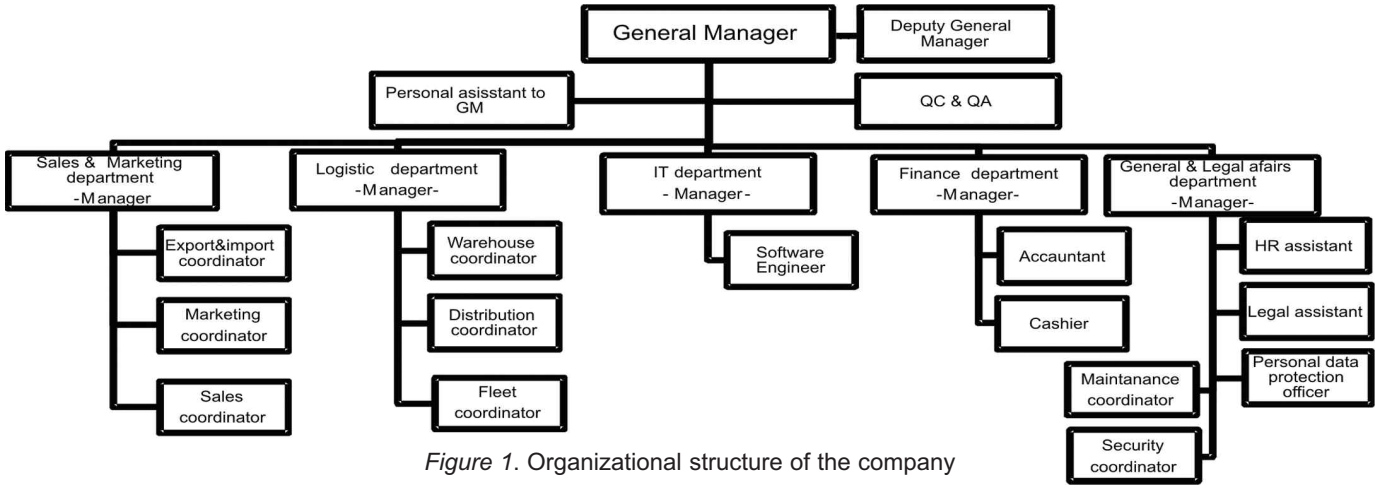


Figure 1. Organizational structure of the company

The policy for quality is determined by the director and is in accordance with ISO 9001 standards as well as the environmental protection control system 14001 while following general company policies. The air conditioning company understands and takes actions to fulfill all customer needs and requests as well as the demands and needs of everyone involved in accordance with all laws and regulations that apply to heat supply. By applying all the newest technological advancements and improving employee excellence and competency, the company can pay closer attention to improving product and service quality, customer relationships and customer trust. All this leads to the increase in the number of satisfied customers, performance process improvements, successfully meeting deadlines and ultimately improving the business as a whole.

The company's main motto is to continually raise the level of knowledge, competence and skill in performing all work-related processes and tasks, especially the ones that can directly influence the quality of the services and products. The company is dedicated to comply with all the laws and regulations of the local and nation-wide authorities. Special attention is given to raise the level of professionalism when dealing with suppliers and all parties involved. The everyday activities of the company go hand in hand with ensuring a healthy work environment by training the employees to raise awareness to do quality work. The quality policies are in accordance to general company policies. They are available to all employees and interested parties in the office as well as the official company website. In accordance with company activities as well as demands and principles of the standards, the quality policy holds functional value within a company. The policy needs to be fully implemented in order to ensure full transparency of internal operations and design performance improvements in the future.

The company is based on a process approach that is underlined by establishing, managing, defining and maintaining a quality system in accordance with all the demands and standards subject to analysis, supervision and constant improvement. The ultimate goal is to continuously improve and satisfy the demands of all interested parties. This is shown in more detail in the diagram below, representing the basic process of the company, Figure 2.

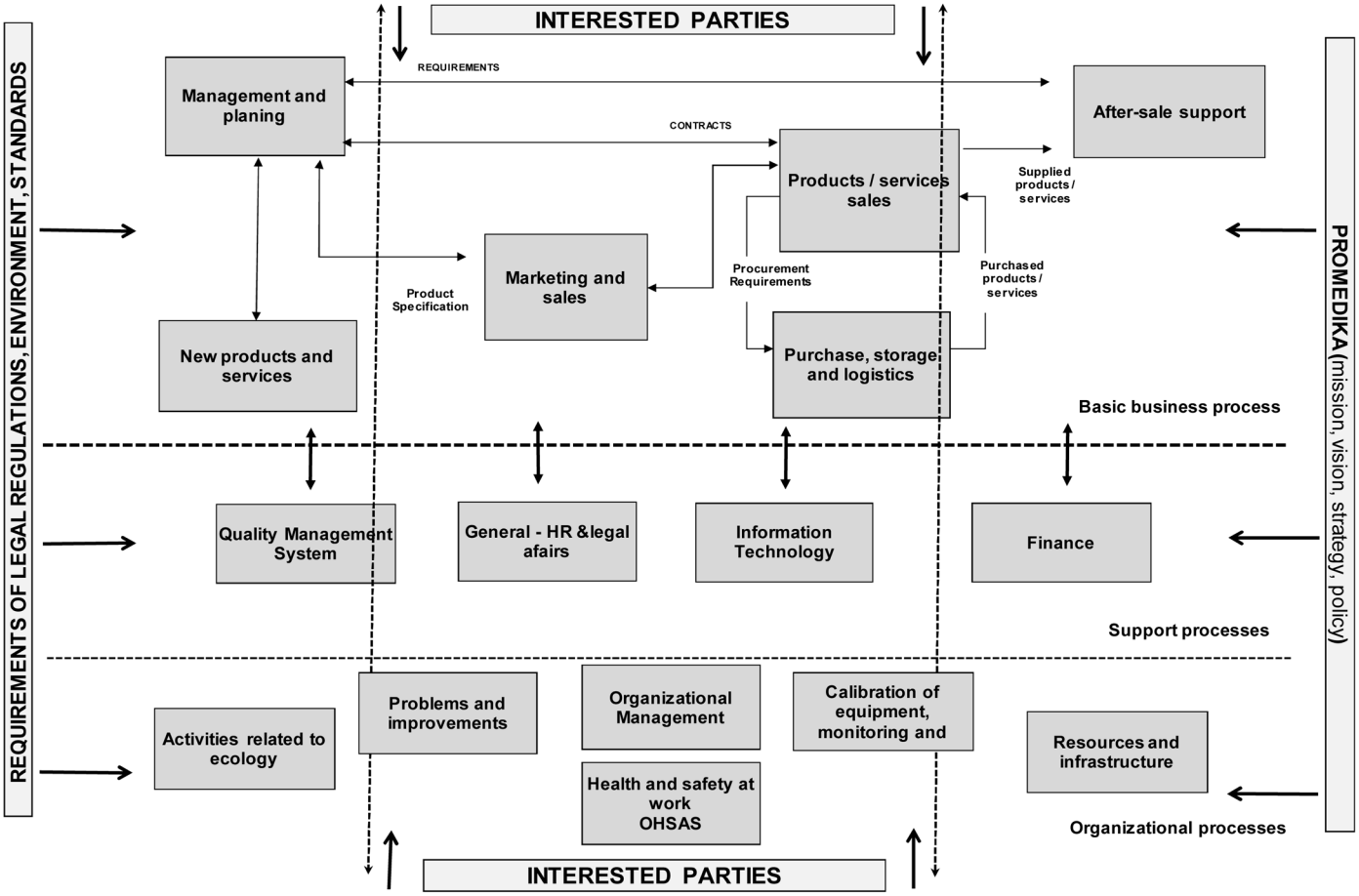


Figure 2. The basic CORE process in the company

The quality control department is responsible for establishing and maintaining constant control and upgrade of the quality system in company processes. The department overlooks implementing new demands and standards related to ensuring a quality product and service as well ensuring the satisfaction of clients and end-users (Mitreva, et al., 2018b). All employees are included in the process of developing and implementing a TQM strategy, forming a business environment and the creation of new products and processes under the guidance and full support of top management. The company is guided by the principle of fully documenting all operations and processes by constantly identifying and dealing with all employee discrepancies. The following diagram is a practical example of projecting the sales process through defining: company operations, process owner, necessary resources, key performance indicators (KPI's) as well as all incoming and outgoing processing documentation, Figure 3.

All the processes in the company are planned and realized with the standard operational actions including all the elements, activities, performers and documents. In order to realize it's processes successfully; the company constantly performs training of all personnel involved in company operations by the process owner. The training is documented with employees confirming they understood and accepted the standard operational procedure (Mitreva et. al., 2017a, Mitreva et. al., 2017b).

Methods of monitoring the performance by analysis of the key process indicators are implemented in order for the company to increase the quality level in all business and organizational processes, reduce cost, reduce product price, improve customer trust as well as raise the knowledge level and

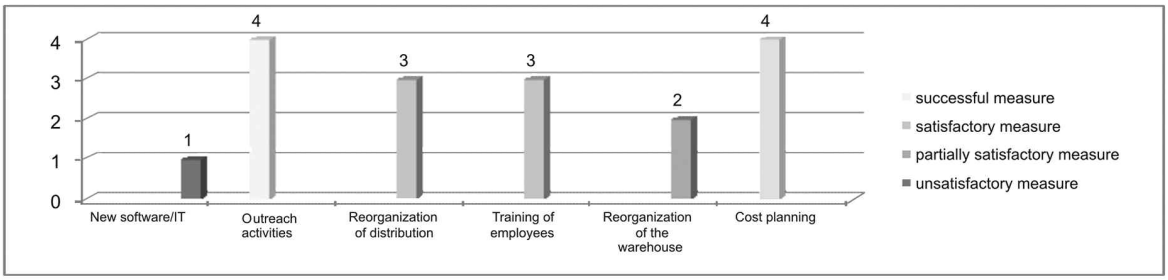
Requarements ISO 9001 ISO 14001	Diagram of Sales Process			Date _____ Version: 1
Resources	**Input**		**Output**	**Documents**
Employees: 18	Request for offer / offer		Document for delivery	QP 1030-1
Products: Heating and Cooling equipment, Ventilation equipment, appliances	Purchase Order from client		Invoice	QT 1030-4
			Bank guarantee	QR 1040-3
			Document for order	QP 1030-4
	Documents for the sale		Complaints statement	QT 1030-16
Physical resources: computers, printers, cars, telephones			Documentation for post-sale activity	QT 1040-8 QT 1040-11
Financial: budget	Tenders	**Resolving complaints**		QR 1040-1
Business environment: laws and regulations		**Requirements review**	Paper receive / loan	QT1020-10-1
		Defining customer requirements	Book of records of invoices	QT1030-37
IT – software: **Software**		**Offer delivery to the client**	Monthly Activity Report	QT 1040-2
Outsourcing: Outsourcing: external trainers, printing services		**Conclusion of a contract**		QR 1030-2

Control points	KPI	Method of measurement	Frequency	Record	Responsible person
1.Sales plan	Realization of the plan	Marketing and business plans, concluded contracts	Once a year Monthly Tracking	Plan	Department Manager
2. Purchase plan	Realization of the plan	Software	Monthly	Plan	Department Manager
3. Inactive liner delisting	% decrese of inactive liner	Actions, withdrawal of product	Quarterly	List of inactive liner, analysis	Department Manager
4. Number of complaints for products and services	Number of resolved / unresolved complaints	Monitoring of complaints	Quarterly	Complaints	Department Manager
5. Liner turnover	% on inactive liner,% of realization of procurement sales and plans	Software, statistical methods, actions	Quarterly	Report for % of turnover increase	Department Manager
Made by:		**Approved by:**			

Figure 3. Sales process in the air conditioning company

skill of its employees. These methods determine the ability of the processes to accomplish the goals of the company. Corrections need to be applied if the goals are not reached. The company carries out planning and implementation of the processes for monitoring, measuring, analysis and improvement in accordance with the defined procedures and guidelines, which prove the conformity of the products and at the same time ensures the functioning and continuous improvement of the efficiency of the quality management system. Monitoring and measurement activities are the basis for setting goals and objectives for the following year. There are three important factors in successful application of statistical methods: awareness of the need, trai-

Points	Action	New software/IT	Outreach activities	Reorganization of distribution	Training of employees	Reorganization of the warehouse	Cost planning
4	successful measure		4				4
3	satisfactory measure			3	3		
2	partially satisfactory measure					2	
1	unsatisfactory measure	1					
	Measure scoring	1	4	3	3	2	4



Measure by performance	
successful measure	2
satisfactory measure	2
partially satisfactory measure	1
unsatisfactory measure	1

Figure 4.
Analysis of the efficiency of implemented corrective measures in the air conditioning company

ning and use of suitable software.

Measurement and analysis are done in key areas that affect profits, process performance, and user satisfaction. The internal quality system verification is carried out in order to verify the compliance of the undertaken activities and results with the planned activities and determine the efficiency of the application of the quality system. Internal checks are done at least once a year or by request, based on pre-determined inconsistencies, repetition of errors or analysis of complaints. The reports of the conducted audit are submitted to the top management, and the corrective measures are taken to the responsible employees in the respective area for the purpose of their timely implementation. By re-checking, the efficiency of the corrective measures is verified, and for this all the analysis of the implemented measures and their success, Figure 4.

In the process of measuring and analyzing the activities and irregularities that occur in different operations and processes, a checklist is drawn up, but analysis and measurement is done for the state of the infrastructure, the records of electronic distribution of documents and internal acts (Mitreva et al., 2018b). Based on the checklist, Pareto analysis (Fig. 5) is used to determine the factors that could have the greatest impact on sales. From the Pareto analysis of irregularities in the company we can conclude that the sale conditions are the most influential factor. The problems that may arise from the software or its application are nearly negligible, Figure 5.

No.	Reason	Frequency	Cumulative frequency	Percentage
4	Sales conditions	11	11	29,73%
3	Marketing	8	19	51,35%
1	Training of employees	6	25	67,57%
5	Product quality	5	30	81,08%
6	Service quality	4	34	91,89%
2	Software	3	37	100,00%

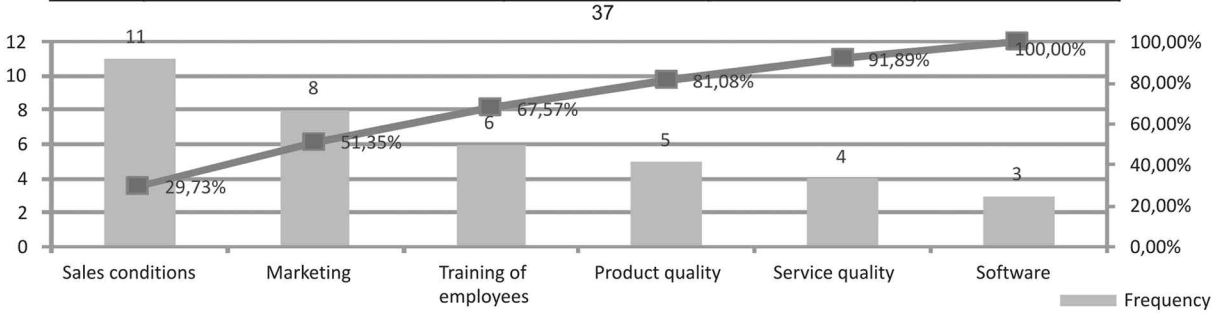


Figure 5. Pareto analysis of activities and irregularities in the air conditioning company

Based on the Pareto approach, the Ishikawa Diagram (Figure 6) is prepared to identify problems and their cause, the factors that influence the sales. Ishikawa diagram is a tool that helps to identify, classify and present possible causes for a particular problem, aspect or danger. The diagram graphically depicts the relationship between a given effect and all the factors that affect it.

The new software that the company has recently implemented is used to perform analysis that monitor the state of the company by measuring customer satisfaction, evaluating suppliers, monitoring and analyzing complaints, financial analyzes and keeping track of equipment in storage.

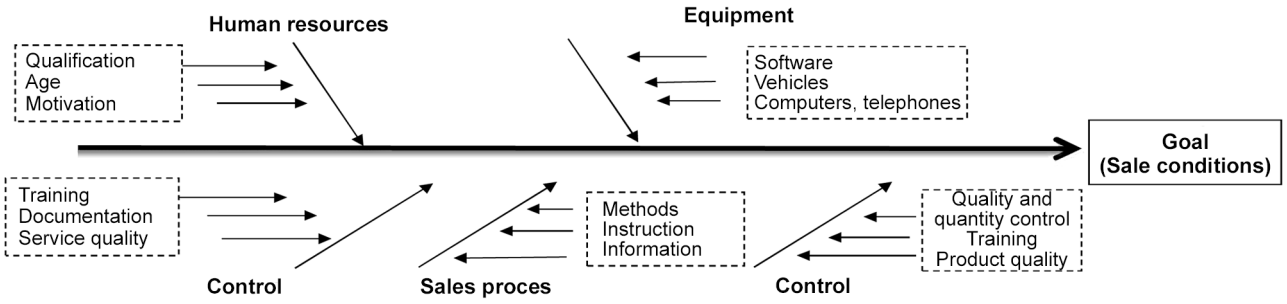


Figure 6. Ishikawa diagram used to identify the main factors that affect sales

In order for the system of total quality management to be efficient, a matrix of authorizations is created where the company's executives are displayed as well as their responsibilities and authorizations regarding the decisionmaking, approval, development, implementation and control of the overall quality assurance system in the air-conditioning company. The General Manager has the exclusive authorization to execute all processes in the company. In the case of his absence this falls under the responsibility of the Deputy General Manager, Figure 7.

Most of the employees in the air conditioning company have university education. The progress of the company is due to well-trained staff and its continuous improvement. In order for the company to provide a future and continued development for its employees, it continuously works to educate its staff. The employees are actively involved in the development of a company in accordance with their competence, knowledge and experience. Employee satisfaction is clearly visible through the commitment to their work and the ongoing educational process. Employee training is an important part of the company's development planning.

Cost control and cost optimization takes up a significant part of data analysis. This activity takes place in all sectors through the preparation of calculations, reviews, plans, reports and other documents that provide analysis of different types of data (project, product, equipment, etc.), in order to make meaningful decisions and continuous improvement.

The air conditioning company uses tools and methods that help increase the market share, fully meet the strict requirements of the standards, satisfy customer needs and demands as well as strive for continuous improvement of the quality. For

ISO 9001 ISO 14 000 ISO 18 000	General Manager		Deputy General Manager		QA & QC Manager		Sales & Marketing department Manager		Logistic department Manager		IT department Manager		Finance department Manager		General & Legal afairs Manager	
	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve
Quality police	D	**A**	D	**A**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Quality manual	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Organizational chart	D	**A**	D	**A**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Job description	D	**A**	D	**A**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Defining processes	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Quality planning	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Documentation - Chapter 4	D	**A**	D	**A**	**PIC**	/	**I**	/	**I**	/	**I**	/	**I**	/	**I**	/
Top management Responsibility Chapter 5	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Review by top management - Chapter 5	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Communication - Chapter 5	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Resources - Human Resources Chapter 6	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Resources - Infrastructure Chapter 6	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Resources - Work Environment - Chapter 6	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Product realization Processes - Chapter 7	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/
Internal audits - Chapter 8	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Measurement and analysis of processes and products	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	/
Continuous improvement - KP action	D	**A**	D	**A**	**PIC**	**OC**	**PIC**	/	**PIC**	/	**PIC**	/	**PIC**	**AF**	**PIC**	/

LEGEND

D	decide
A	approve
P	prepare, participates in preparation
I	implement
PIC	prepare, participates in preparation, implement, control
C	control
AQ	approve quality
AF	approve finance

Figure 7.
Matrix of responsibilities and authority in the air conditioning company

Evidence of complaints

No.	Description of the complaint (for product-manufacturer, name, code, serial number, date of import, date of installation / servicing)			SPARE PART	Qty.	Date of claim	NOTE
	SPARE PART	UNIT	SN	CODE			
1	VENTILATOR-LINER	OOO1		2200115	2	07.2.2018	Solved-Accepted by manufacturer in warranty
2	PC BOARD	AAA1		3100225	1	09.3.2018	Solved-Accepted by manufacturer in warranty
3	FINTER FOR INDOR UNIT-LINER	OOO1	545485558	2200228	2	15.3.2018	Solved-Accepted by manufacturer in warranty
4	PLASTIC MASK	BBB2	457485655	5538911	1	01.4.2018	Solved-Accepted free of charge *customer focus
5	CONDESATOR	CCC3	457855448	10002078	1	19.4.2018	Solved-Accepted free of charge *customer focus
6	GENERATOR	AAA1	445171259	6744871	1	25.6.2018	Solved-Accepted by manufacturer in warranty

	Q2 /2018	Q2/2017
LINER	4	4
AAA1	2	2
BBB2	1	2
CCC3	1	2
Total Q2 /year:	**8**	**10**

Q1	
SOLVED	8
NOT SOLVED	0
VALIDATE	8
NOT VALIDATE	0

CORRECTIVE / PREVENTIVE ACTIONS	
Complaints are in accordance with the quantity of sold devices. Corrective measures: / Preventive measures: **to monitor and analyze complaints on a monthly basis**	

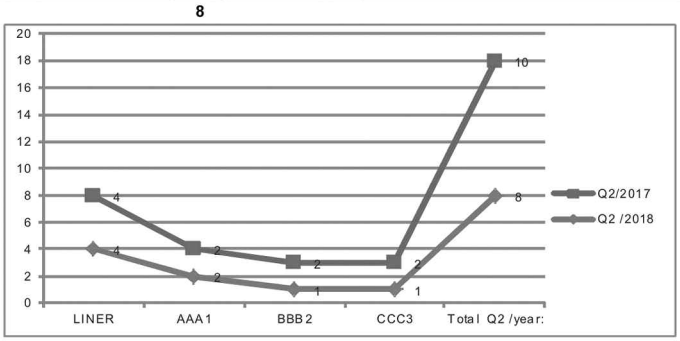


Figure 8.
Complaints evidence /quality cost analysis in the company

this purpose, in addition to the implemented procedures, instructions, records, as part of the overall standardized documentation, the company also introduced new software used to make appropriate analyzes for reducing the variability of the processes, and as a result increase the quality of the products and services.

The plan for the realization of products and services is determined on the basis of the plans in each sector at weekly, monthly, quarterly and annual interval as needed. Prior to the preparation of the plans, an analysis of the operation is carried out and the resources necessary for the realization of the plans are checked. The correct procedures and work instructions are defined for all product related processes.

The modernization of information and communication technology in every segment of the processes allows development of specialized software for statistical control of the processes in order to enable managers to move from subjective decision-making to objective decision-making based on analysis and experience and based on the analysis and processing of statistical data. Applying the methods and techniques of quality in the company leads to an increase in employee motivation, increased productivity, expansion of markets, etc. From analysis of data processing, inconsistencies, complaints, etc. the application of corrective measures with defined deadlines for enforcement, responsible persons and persons for monitoring of procedures arises, Figure 8.

Internal checks, which are performed at least twice a year, as well as the external check, are a great way of checking the quality system and the realization of all processes in the company in order to achieve the organizational goals.

In 2018, the air conditioning company acquired the prestigious recognition for the 2018 "Macedonian quality" awarded by the Macedonian Chambers of Commerce in accordance with the established criteria in the creation and maintenance of a national brand. Quality recognition is an incentive to continue with successful work and to represent the country with quality and confidence and to promote business success.

4. Conclusions and Recommendations

Adopting the total quality management philosophy in the company means continuous improvements, increasing the commitment of top management and employees to improve the processes as well as the satisfaction of all employees, suppliers and the community. The benefits of total quality management are mutual, both for the organization and for the buyers. For customers it means to have their needs and desires met, and for the company increased reputation and sustainable development.

The company values in terms of respect for the decisions of top management, compliance with the legislation, market demands, willingness to take a risk, the drive for innovation, investments in new resources, employee training and development, the application of new methods for analysis and measurements, compliance with standards, etc., are the major benefits of applying the TQM philosophy.

References

[1] Balbaster Benavent, F., Cruz Ros, S., & Moreno-Luzon, M. (2005). A model of quality management self-assessment: an exploratory research. *International Journal of Quality & Reliability Management*, 22(5), 432-451. DOI https://doi.org/10.1108/02656710510598366.

[2] Beskese, A. & Cebeci, U. (2001). Total quality management and ISO 9000 applications in Turkey, *The TQM Magazine*, 13(1), pp. 69-73.

[3] Casadesus, M., & Gimenez, G. (2000). The benefits of the implementation of the ISO 9000 standard: empirical research in 288 Spanish companies, *The TQM Magazine*, 12(6), 432-441.

[4] Ciampa, D. (2005). Almost ready: how leaders move up. *Harvard business review*, 83(1), 46-53. 116] (PMID: 15697112).

[5] Deming, W. E. (1996). *How to go out of the crises*. PS Grmeč, Beograd, 30.

[6] Fatemi, S. M., Wei, C. C., & Moayeryfard, H. (2016). CSFs for Total Quality Management (TQM) in Service Organizations. *International Journal of Academic Research in Business and Social Sciences*, 6(1), 254-264.

[7] García-Bernal, J., Gargallo-Castel, A., Pastor-Agustín, G., & Ramírez-Alesón, M. (2004). Total quality management in firms: Evidence from Spain. *The Quality Management Journal*, 11(3), 20.

[8] Gómez Gómez, J., Martínez Costa, M., & Martínez Lorente, Á. R. (2011). A critical evaluation of the EFQM model. *International Journal of Quality & Reliability Management*, 28(5), 484-502. https://doi.org/10.1108/02656711111132544.

[9] Garg, P. (2014). Impact of employee engagement on it sector. *International Journal of Management Research and Reviews*, 4(1), 62.

[10] Kaplan, R. S., & Norton, D. P. (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*. Boston, Massachusetts: Harvard Business Press.

[11] Mitreva, E. (2011). Model-integral methodology for successful designing and implementing of TQM system in Macedonian companies. *International Journal for Quality Research*, 5(4), 255-260.

[12] Mitreva, E., & Filiposki, O. (2012). Proposal methodology of the subsystem-internal standardization as part of TQM system. *International Journal for Quality Research*, 6(3), 251-258.

[13] Mitreva, E., Nikolov, E., & Nikolova, B. (2016). Application of Total Quality Management (TQM) in the Macedonian Railways Transport in the Republic of Macedonia. *Quality-Access to Success*, 17(151), pp. 55-59.

[14] Mitreva, E., Pancev, D., Gjorshevski, H., Filiposki, O., & Metodijeski, D. (2017a). The implementation of the Quality Costs Methodology in the Public Transport Enterprise in Macedonia. *TEM Journal*, 6(1), 153-161. DOI: 10.18421/TEM61-23.

[15] Mitreva, E., Taskov, N., Filiposki, O., Lazarevski, I., & Gjorshevski, H. (2017b). The Success of Projecting and Implementing Quality System in the Macedonian Companies. *TEM Journal*, 6(2), 372-379. DOI: 10.18421/TEM62-24.

[16] Mitreva, E., Gjurevska, S., & Gjorshevski, H. (2018a). Optimization of the Business Processes in a Company for Manufacture of Bread and Bakery Products in Macedonia. *Tem Journal*, 7(2), 439-445.

[17] Mitreva, E., Sazdova, J., & Gjorshevski, H. (2018b). Management with the Quality Control System in the Hotel Industry in Macedonia. *Tem Journal*, 7(4), 750-757.

[18] Madan, P. (2010). An award journey for business excellence: the case study of a public sector unit. *Total Quality Management*, 21(12), 1343-1364. DOI: https://doi.org/10.1080/14783363.2010.530774.

[19] Parker, G. M. (2003). *Cross-functional teams: Working with allies, enemies, and other strangers*. San Francisco: John Wiley & Sons.

[20] Ritchie, L., & Dale, B. G. (2000). Self-assessment using the business excellence model: a study of practice and process. *International Journal of Production Economics*, 66(3), 241-254. DOI: https://doi.org/10.1016/S0925-5273 (99)00130-9.

[21] Saat, N. Z. M., & Talib, H. H. A. (2015). A Review of the Quality Management, Environmental Management and Company Performance: Among Malaysia Food SMEs. In *3rd International Conference on Business*.

[22] Shameer, D., & Sing, C. (2013). Barriers to total quality management (TQM)-Implementation in the Mauritian food industry. *Proceedings of the 11th International Conference on Manufacturing Research (ICMR2013)*, Cranfield University, UK, 19th – 20th September 2013, pp. 611-616.

[23] Wee, W. C. W., Baskaran, T. L., Woon, K. K., Chow, P. Y., & Mangalam, A. M. J. (2016). Total quality management barriers: Malaysia's SME perspective. *International Journal of Modelling in Operations Management*, 6(1-2), 88-111.